



CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005



Job No.: CTCE/BBMP/W.No.02/SR/CSR-05/043a/CEMENT/2016-17

Date: 21.05.2016

TEST REPORT ON CEMENT

* CUSTOMER	: Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
* AGENCY	: Mr. Sambashivareddy, No.14, 6 th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
* NAME OF THE WORK	: Providing asphaltting to 26 th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
* REFERENCE	: EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
SAMPLE ID	: Cement - Sample 2
SAMPLE RECEIVED ON	: 19.05.2016
PERIOD OF TESTING	: 19.05.2016 to 21.05.2016



The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	31.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	140 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	490 Minutes	Not More than 600 Minutes
3	Soundness by Le Chatelier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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Asst. Executive Engineer
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VISHWANATH. I.A.
Chief Executive Officer



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Job No.: CTCE/BBMP/W.No.02/SR/CSR-05/043a/SAND-Gradation/2016-17

: 21.05.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

* **Customer** : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

* **Agency** : Mr. Sambashivareddy,
No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.

* **Name of Work** : Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates – Sample 2

Sample Received on : 19.05.2016

Date of Testing : 21.05.2016



Total Wt. of Aggregates in gms 1000

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	95.50	90-100	90-100	90-100	95-100
2.36	76.30	60-95	75-100	85-100	95-100
1.18	54.30	30-70	55-90	75-100	90-100
600 Micron	25.80	15-34	35-59	60-79	80-100
300 Micron	11.60	5-20	8-30	12-40	15-50
150 Micron	5.10	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Chief Executive Officer



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Job No.: CTCE/BBMP/W.No.02/SR/CSR-05/043a/AGG/GR/2016-17

: 21.05.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

* Customer : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

* Agency : Mr. Sambashivareddy,
No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.

* Name of Work : Providing asphaltting to 26th A Cross western side Kondappa layout in Ward
No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016

Technical Reference : IS : 2386 Part 1 -1963 RA-2007

Sample ID : Coarse Aggregates (40mm)

Sample Received on : 19.05.2016

Date of Testing : 21.05.2016



Total Wt. of Aggregates in gms= 7000

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.43	95-100	85-100
20	40.29	30-70	0-20
10	18.50	10-35	0-5
4.75	4.21	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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Chief Executive Officer



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Job No.: CTCE/BBMP/W.No.02/SR/STEEL/2016-17

21.05.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer : Asst. Executive Engineer, Yelahanka Sub Division,
BBMP, Bangalore.

Agency : Mr. Sambashivareddy,
No.14, 6th Cross, Gopalappa Layout, Manorayanapalya,
Bangalore - 32.

Name of the Work : Providing asphaltting to 26th A Cross western side
Kondappa layout in Ward No.02 of Yelahanka Sub
Division, BBMP, Bangalore.

Reference : EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated:
19.05.2016

Date of Test : 21.05.2016

Technical Reference : IS: 1786-2008



Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm ²	Tensile strength (Ultimate stress) N/mm ²	Elongation percent gauge length		
1	10	0.62	513	556	13.20	O.K	O.K

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Job No: CTCE/BBMP/W.No.02/SR/GSB-I/GR/2016-17

Date : 29.05.2016

GRADATION FOR GSB-I (CLOSE GRADED)

IS: 2720 (Part 4)

Client : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Agency : Mr. Sambashivareddy,
No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.

Name of work : Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016

Date of Testing : 29.05.2016



Sample Source : GSB Mix Plant Bangalore.

Oven Dry Wt (gm) : 8310

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	100	100
53.0	170	170	2.05	97.95	80-100
26.50	2510	2680	32.25	67.75	55-90
9.50	1285	3965	47.71	52.29	35-65
4.75	1030	4995	60.11	39.89	25-55
2.36	990	5985	72.02	27.98	20-40
0.425	965	6950	83.63	16.37	10-25
0.075	910	7860	94.58	5.42	3-10
PAN	450				
Total	8310				



Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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Job No: CTCE/BBMP/W.No.02/SR/WMM/AIV/2016-17

01.06.2016

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
Name of the Work	Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	01.06.2016



Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	22.72
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	22.62	22.82	
	$100 \times (W_2/W_1)\%$			

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No: CTCE/BBMP/W.No.02/SR/WMIM/S-T/2016-17



01.06.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
Name of Work	Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	01.06.2016



Result : Flakiness Index = 12.35%

Elongation Index = 13.90%

Result : Combined Flakiness & Elongation index 26.25%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%.

Note:

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Job No.: CTCE/BBMP/W.No.02/SR/WMM/Gradation/2016-17

01.06.2016

GRADATION FOR WMM MORTH TABLE-400-11

Client : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Agency : Mr. Sambashivareddy,
No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.

Name of Work : Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016

Date of Testing : 01.06.2016

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 8060



Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	210	210	2.6	97.4	95-100
22.4	2590	2800	34.7	65.3	60-80
11.2	1250	4050	50.2	49.8	40-60
4.75	1150	5200	64.5	35.5	25-40
2.36	995	6195	76.9	23.1	15-30
0.600	900	7095	88.0	12.0	8-22
0.075	780	7875	97.7	2.3	0-8

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01.06.2016

GRADATION FOR WMM MORTH TABLE-400-11

Client : Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

Agency : Mr. Sambashivareddy,
No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.

Name of Work : Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.

Reference : EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016

Date of Testing : 01.06.2016

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 8425



Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	185	185	2.2	97.8	95-100
22.4	2450	2635	31.3	68.7	60-80
11.2	1300	3935	46.7	53.3	40-60
4.75	1215	5150	61.1	38.9	25-40
2.36	1050	6200	73.6	26.4	15-30
0.600	980	7180	85.2	14.8	8-22
0.075	760	7940	94.2	5.8	0-8

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Job No: CTCE/BBMP/W.No.02/SR/BM/Shape.T/2016-17

: 11.07.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	: Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
Name of Work	: Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	: EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Bituminous Macadam
Date of Testing	: 11.07.2016



Flakiness Index = 12.32%

Elongation Index = 13.25%

Result : Combined Flakiness & Elongation index 25.57%

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

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Job No: CTCE/BBMP/W.No.02/SR/BM/Sp_Wa/2016-17

12.07.2016

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
Name of the Work	Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	12.07.2016



Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 2	
1	Weight of aggregate suspended in water with the basket	$W_1 g$	2008	2010	2012	
2	Weight of basket suspended in water	$W_2 g$	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_3 g$	1258	1260	1262	
4	Weight of saturated surface dry aggregate in air	$W_3 g$	2019	2022	2025	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_2) g$	761	762	763	
6	Weight of oven dried aggregate	$W_4 g$	2000	2005	2010	
7	Specific Gravity	$W_4 / (W_3 - W_2)$	2.628	2.631	2.634	2.631
8	Apparent Specific gravity	$W_4 / (W_4 - W_2)$	2.695	2.691	2.687	2.691
9	Water Absorption	$((W_3 - W_4) * 100) / W_4$	0.95%	0.85%	0.75%	0.85%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No.: CTCE/BBMP/W.No.02/SR/BM/Bitumen/2016-17

12.07.2016

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

AS per IRC:SP:-11- 1984

CUSTOMER	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
AGENCY	Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
NAME OF THE WORK	Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
REFERENCE	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
SAMPLE I/D	26th A Cross western side Kondappa layout in Ward No.02
DATE OF TESTING	12.07.2016



BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482	482
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	18	18.00
7. Bitumen content in %	3.60	3.60
8. Average	3.60	

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Job No.: CTCE/BBMP/W.No.02/SR/BM/Bitumen/2016-17

12.07.2016

GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
AGENCY	Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
NAME OF THE WORK	Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
REFERENCE	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
SAMPLE I/D	26th A Cross western side Kondappa layout in Ward No.02
DATE OF TESTING	12.07.2016



GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	36.35	7.54	7.54	92.46	90-100
13.2	92.32	19.15	26.70	73.30	56-88
4.75	262.1	54.38	81.07	18.93	16-36
2.36	46.31	9.61	90.68	9.32	4-19
0.3	28.52	5.92	96.60	3.40	2-10
0.075	4.15	0.86	97.46	2.54	0-8

b The results indicated above are based on the tests carried	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	30.26	6.28	6.28	93.72	90-100
13.2	73.32	15.21	21.49	78.51	56-88
4.75	253.6	52.61	74.10	25.90	16-36
2.36	53.31	11.06	85.16	14.84	4-19
0.3	38.23	7.93	93.10	6.90	2-10
0.075	14.26	2.96	96.05	3.95	0-8

Note:

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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005



Job No: CTCE/BBMP/W.No.02/SR/BM/Agg.G/2016-17

12.07.2016

Aggregate Gradation Test

IS : 2386 Part I

Customer	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
Name of the work	Providing asphaltting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	12.07.2016



Total Weight of Sample: 5100 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	355	6.96	6.96	93.04	90-100	
13.2	1565	30.69	37.65	62.35	56-88	
4.75	1850	36.27	73.92	26.08	16-36	
2.36	850	16.67	90.59	9.41	4-19	
0.3	250	4.90	95.49	4.51	2-10	
0.075	80	1.57	97.06	2.94	0-8	

Total Weight of Sample: 5150 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	330	6.41	6.41	93.59	90-100	
13.2	1605	31.17	37.57	62.43	56-88	
4.75	1450	28.16	65.73	34.27	16-36	
2.36	880	17.09	82.82	17.18	4-19	
0.3	450	8.74	91.55	8.45	2-10	
0.075	215	4.17	95.73	4.27	0-8	

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Job No.: CTCE/BBMP/W.No.02/SR/CSR-05/043a/QB(SDBC)/2016-17

11.07.2016

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
*AGENCY	:	Mr. Sambashivareddy, No.14, 6 th Cross, Gopalappa Layout, Manorayanapalya, Bangalore - 32.
*NAME OF THE WORK	:	Providing asphaltting to 26 th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
REFERENCE	:	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	09.07.2016
DATE OF TESTING	:	11.07.2016



The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	83	80 to 100
2	Softening point, °C	IS :1205 -1978 (RA-2009)	45	Min. 40
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	302	Min. 220

*Information is furnished by the Customer/Representative.



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Yelahanka Sub. Division
(BBMP Ynk. Zn)
Yelahanka, Bangalore

[Handwritten signature]
VISHWANATH. I.A.
Chief Executive Officer

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